

WHAT IS CLAIMED IS:

1. ~~A digital optical communication device comprising:~~
an optical reception circuit converting an optical signal received from
any external source to an electric signal;
a decoding circuit decoding the electric signal resultant from
5 conversion by said optical reception circuit and judging whether or not the
decoding is normally completed;
a reception light intensity level judgement circuit judging an
intensity level of received light based on the electric signal resultant from
conversion by said optical reception circuit;
10 a coding circuit coding transmission data; and
an optical transmission circuit determining a light emission intensity
based on result of the judgement by said reception light intensity level
judgement circuit and result of the judgement by said decoding circuit and
converting the transmission data coded by said coding circuit to an optical
15 signal with the light emission intensity.

2. The digital optical communication device according to claim 1,
wherein
said reception light intensity level judgement circuit compares the
electric signal resultant from conversion by said optical reception circuit
5 with a plurality of reference voltages, and judges said intensity level of the
~~received light based on result of the comparison.~~

3. The digital optical communication device according to claim 1,
wherein
said optical transmission circuit determines the light emission
intensity by referring to the intensity level judged by said reception light
5 intensity level judgement circuit if said decoding circuit judges that the
decoding is normally completed, and
said optical transmission circuit determines the light emission
intensity without referring to the intensity level judged by said reception

10 light intensity level judgement circuit if said decoding circuit judges that the decoding is not normally completed.

4. The digital optical communication device according to claim 1, further comprising:

an optical fiber connected to said optical transmission circuit; and
an optical fiber connected to said optical reception circuit.

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A. 5. A digital optical communication device comprising:
an optical reception circuit converting an optical signal received from any external source to an electric signal;
a decoding circuit decoding the electric signal resultant from
5 conversion by said optical reception circuit and extracting reception light intensity information of a secondary station;
a coding circuit coding transmission data; and
an optical transmission circuit determining a light emission intensity
based on the reception light intensity information of the secondary station
10 extracted by said decoding circuit, and converting the transmission data coded by said coding circuit to an optical signal with the light emission intensity.

~~6. The digital optical communication device according to claim 5, wherein~~

5 said decoding circuit decodes the electric signal resultant from conversion by said optical reception circuit and extracts the reception light intensity information and reception normal completion information of the secondary station, and

10 said optical transmission circuit determines the light emission intensity based on the reception light intensity information and the reception normal completion information of the secondary station that are extracted by said decoding circuit, and converts the transmission data coded by said coding circuit to the optical signal with the light emission intensity.

sub 527 7. The digital optical communication device according to claim 5, further comprising:

an optical fiber connected to said optical transmission circuit; and
an optical fiber connected to said optical reception circuit.

~~8. A digital optical communication device comprising:~~

an optical reception circuit converting an optical signal received from any external source to an electric signal;

5 a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit and judging whether or not the decoding is normally completed;

a reception light intensity level judgement circuit judging an intensity level of received light based on the electric signal resultant from conversion by said optical reception circuit;

10 a coding circuit generating reception light intensity information of a primary station based on result of the judgement by said decoding circuit and result of the judgement by said reception light intensity level judgement circuit and coding transmission data and said reception light intensity information; and

15 an optical transmission circuit converting the reception light intensity information and the transmission data coded by said coding circuit to an optical signal.

sub 537 9. The digital optical communication device according to claim 8, wherein

5 said coding circuit encodes said transmission data, said reception light intensity information, and reception normal completion information judged by said decoding circuit, and

said optical transmission circuit converts the transmission data, the reception light intensity information, and the reception normal completion information coded by said coding circuit to the optical signal.

10. The digital optical communication device according to claim 8,

further comprising:

an optical fiber connected to said optical transmission circuit; and
an optical fiber connected to said optical reception circuit.

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11. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from
any external source to an electric signal;

5 a decoding circuit decoding the electric signal resultant from
conversion by said optical reception circuit, extracting a light emission
intensity requested from a secondary station, and judging whether or not
the decoding is normally completed;

10 a reception light intensity level judgement circuit judging a reception
light intensity level based on the electric signal resultant from conversion
by said optical reception circuit;

15 a secondary station request light emission intensity control signal
generation circuit generating light emission intensity information
requested to the secondary station based on result of the judgement by said
decoding circuit and on the reception light intensity level judged by said
reception light intensity level judgement circuit;

20 a coding circuit coding transmission data and the light emission
intensity information requested to the secondary station generated by said
secondary station request light emission intensity control signal generation
circuit; and

an optical transmission circuit converting the transmission data and
the light emission intensity information requested to the secondary station
that are coded by said coding circuit with the light emission intensity
requested from the secondary station that is extracted by said decoding
circuit.

12. The digital optical communication device according to claim 11,
wherein

said reception light intensity level judgement circuit judges the
reception light intensity level based on the electric signal resultant from

5 conversion by said optical reception circuit from the time at which said decoding circuit detects a start flag to the time at which said decoding circuit detects a stop flag.

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13. The digital optical communication device according to claim 11, wherein

5 said reception light intensity level judgement circuit judges the reception light intensity level by measuring a pulse width of the electric signal resultant from conversion by said optical reception circuit.

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14. The digital optical communication device according to claim 11, further comprising:

an optical fiber connected to said optical transmission circuit, and
an optical fiber connected to said optical reception circuit.

15. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

5 a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit, extracting a secondary station light emission intensity information, and judging whether or not the decoding is normally completed;

10 a reception light intensity level judgement circuit judging a reception light intensity level based on the electric signal resultant from conversion by said optical reception circuit;

a primary station light emission intensity control signal generation circuit determining a light emission intensity of a primary station based on the secondary station light emission intensity information extracted by said decoding circuit, on result of the judgement by said decoding circuit, and on
15 result of the judgement by said reception light intensity level judgement circuit;

a coding circuit coding transmission data and information on the light emission intensity of the primary station determined by said primary

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station light emission intensity control signal generation circuit; and
an optical transmission circuit converting the transmission data and
the light emission intensity information coded by said coding circuit to an
optical signal with the light emission intensity determined by said primary
station light emission intensity control signal generation circuit.

16. The digital optical communication device according to claim 15,
further comprising:

an optical fiber connected to said optical transmission circuit; and
an optical fiber connected to said optical reception circuit.

~~17. A digital optical communication method comprising the steps of:
converting an optical signal received from any external source to an
electric signal;~~

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~~decoding said electric signal resultant from conversion and judging
whether or not the decoding is normally completed;~~

~~judging an intensity level of received light based on said electric
signal resultant from conversion;~~

~~coding transmission data; and~~

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~~determining a light emission intensity based on said judged intensity
level of the received light and on result of said judgement as to whether or
not the decoding is normally completed, and converting said coded
transmission data to an optical signal with the light emission intensity.~~

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18. A digital optical communication method comprising the steps of:
converting an optical signal received from any external source to an
electric signal;

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~~decoding said electric signal resultant from conversion and
extracting reception light intensity information of a secondary station;
coding transmission data; and~~

~~determining a light emission intensity based on said extracted
reception light intensity information of the secondary station, and
converting said coded transmission data to an optical signal with the light~~

10 emission intensity.

~~19. A digital optical communication method comprising the steps of:
converting an optical signal received from any external source to an
electric signal;~~

~~5 decoding said electric signal resultant from conversion and judging
whether or not the decoding is normally completed;~~

~~judging an intensity level of received light based on said electric
signal resultant from conversion;~~

~~10 generating reception light intensity information of a primary station
based on said judged intensity level of the received light and on result of
said judgement as to whether or not the decoding is normally completed,
and coding transmission data and said reception light intensity
information; and~~

~~converting said coded reception light intensity information and said
coded transmission data to an optical signal~~

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E1 } 20. A digital optical communication method comprising the steps of:
converting an optical signal received from any external source to an
electric signal;

~~5 decoding said electric signal resultant from conversion, extracting a
light emission intensity requested from a secondary station, and judging
whether or not the decoding is normally completed;~~

~~judging a reception light intensity level based on said electric signal
resultant from conversion;~~

~~10 generating light emission intensity information requested to the
secondary station based on result of said judgement as to whether or not
the decoding is normally completed and on said judged reception light
intensity level;~~

~~coding transmission data and said generated light emission intensity
information requested to the secondary station; and~~

~~15 converting said coded transmission data and said coded light
emission intensity information requested to the secondary station to an~~

optical signal with said extracted light emission intensity requested from the secondary station.

~~21. A digital optical communication method comprising the steps of:~~
converting an optical signal received from any external source to an electric signal;

5 decoding said electric signal resultant from conversion, extracting a secondary station light emission intensity, and judging whether or not the decoding is normally completed;

judging a reception light intensity level based on said electric signal resultant from conversion;

10 determining a light emission intensity of a primary station based on said extracted secondary station light emission intensity, on result of said judgement as to whether or not the decoding is normally completed, and on said judged reception light intensity level;

coding transmission data and information on said determined light emission intensity of the primary station; and

15 converting said coded transmission data and said coded light emission intensity information to an optical signal with said determined light emission intensity.

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